

# User Manual

Revision 1.000  
English

## Gateway / Bridge CAN from/to Modbus TCP Client

(Order Code: HD67414)

for Website information:

[www.adfweb.com?Product=HD67414](http://www.adfweb.com?Product=HD67414)

for Price information:

[www.adfweb.com?Price=HD67414](http://www.adfweb.com?Price=HD67414)

### Benefits and Main Features:

- ▶ Very easy to configure
- ▶ Low cost
- ▶ Wide supply input range
- ▶ Isolation between two buses
- ▶ Industrial temperature range:  
-40°C / 105°C (-40°F / 221°F)



HD67414

Similar  
Products



For other Gateways / Bridges:

#### CANopen to Modbus

See also the following links:

[www.adfweb.com?Product=HD67001](http://www.adfweb.com?Product=HD67001)

(Modbus RTU Master)

[www.adfweb.com?Product=HD67502](http://www.adfweb.com?Product=HD67502)

(Modbus RTU Slave)

[www.adfweb.com?Product=HD67504](http://www.adfweb.com?Product=HD67504)

(Modbus TCP Server)

[www.adfweb.com?Product=HD67505](http://www.adfweb.com?Product=HD67505)

(Modbus TCP Client)

#### CAN to Modbus

See also the following links:

[www.adfweb.com?Product=HD67011](http://www.adfweb.com?Product=HD67011)

(Modbus RTU Master)

[www.adfweb.com?Product=HD67012](http://www.adfweb.com?Product=HD67012)

(Modbus RTU Slave)

#### Ethernet to

See also the following links:

[www.adfweb.com?Product=HD67503](http://www.adfweb.com?Product=HD67503)

(CANopen)

[www.adfweb.com?Product=HD67513](http://www.adfweb.com?Product=HD67513)

(CAN)

Do you have an your customer protocol?

See the following links:

[www.adfweb.com?Product=HD67003](http://www.adfweb.com?Product=HD67003)

Do you need to choose a device? do you want help?

Ask it to the following link:

[www.adfweb.com?Cmd=helpme](http://www.adfweb.com?Cmd=helpme)

Benefit



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## UPDATED DOCUMENTATION:

Dear customer, we thank you for your attention and we remind you that you need to check that the following document is:

- ✚ Updated
- ✚ Related to the product you own

To obtain the most recently updated document, note the "document code" that appears at the top right-hand corner of each page of this document.

With this "Document Code" go to web page [www.adfweb.com/download/](http://www.adfweb.com/download/) and search for the corresponding code on the page. Click on the proper "Document Code" and download the updates.

To obtain the updated documentation for the product that you own, note the "Document Code" (Abbreviated written "Doc. Code" on the label on the product) and download the updated from our web site [www.adfweb.com/download/](http://www.adfweb.com/download/)

## REVISION LIST:

Revision	Date	Author	Chapter	Description
1.000	27/11/2012	Ff	All	First release version

## WARNING:

ADFweb.com reserves the right to change information in this manual about our product without warning.

ADFweb.com is not responsible for any error this manual may contain.

## TRADEMARKS:

All trademarks mentioned in this document belong to their respective owners.

**SECURITY ALERT:****GENERAL INFORMATION**

To ensure safe operation, the device must be operated according to the instructions in the manual. When using the device are required for each individual application, legal and safety regulation. The same applies also when using accessories.

**INTENDED USE**

Machines and systems must be designed so the faulty conditions do not lead to a dangerous situation for the operator (i.e. independent limit switches, mechanical interlocks, etc.).

**QUALIFIED PERSONNEL**

The device can be used only by qualified personnel, strictly in accordance with the specifications.

Qualified personnel are persons who are familiar with the installation, assembly, commissioning and operation of this equipment and who have appropriate qualifications for their job.

**RESIDUAL RISKS**

The device is state of the art and is safe. The instrument can represent a potential hazard if they are inappropriately installed and operated by personnel untrained. These instructions refer to residual risks with the following symbol:



This symbol indicates that non-observance of the safety instructions is danger for people to serious injury or death and / or the possibility of damage.

**CE CONFORMITY**

The declaration is made by us. You can send an email to [support@adfweb.com](mailto:support@adfweb.com) or give us a call if you need it.

**CHARACTERISTICS:**

The “**HD67414**” series are rugged devices used to interface CAN devices with Modbus TCP Slaves.

With his particular enclosure, equipped with four fixing lugs, makes available the mounting of the device in any plane surface (horizontal, vertical, oblique).

It is possible to have the device varnished or totally resined and also in both cases with “Mini-Fit®” connectors or “AMP SuperSeal 1.5” connectors. If is resined, the enclosure, like the “AMP SuperSeal 1.5” connectors, is waterproof (IP63).

The device have these characteristics:

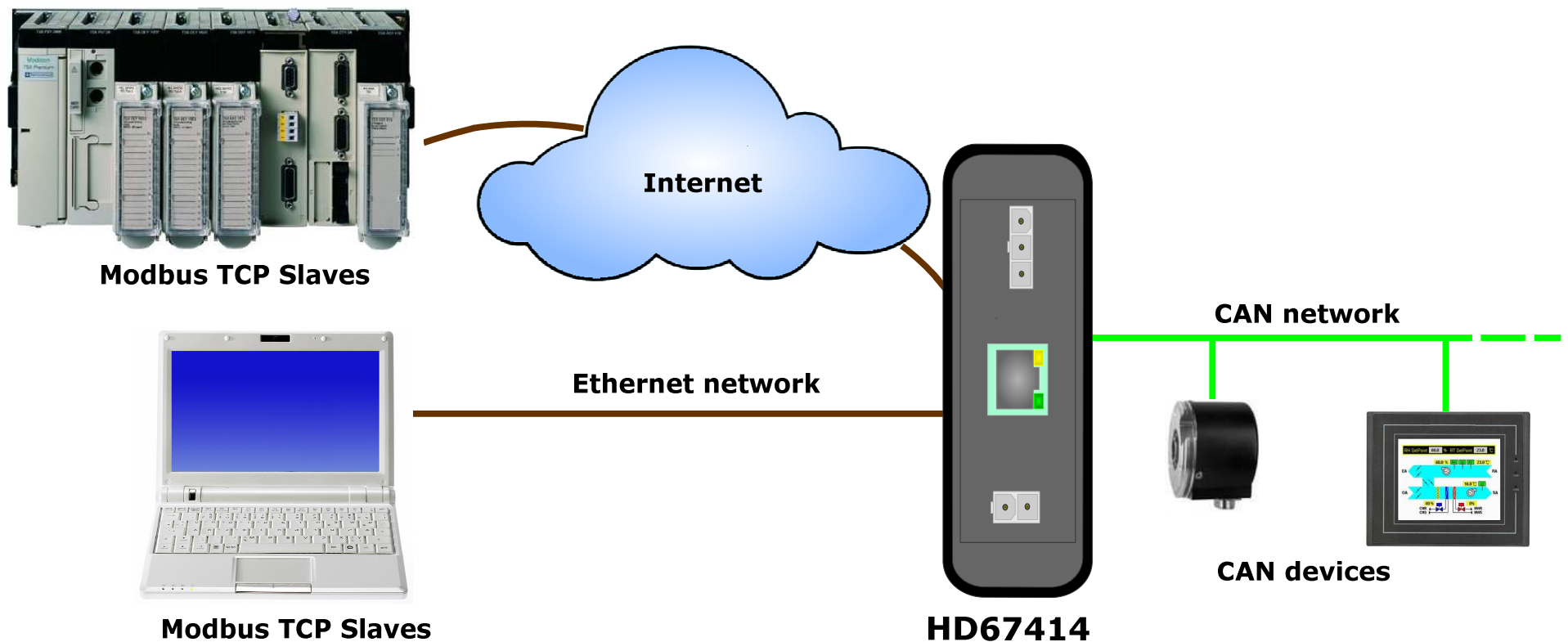
- Triple 4kV isolation between Power Supply / Ethernet / CAN;
- Varnished / Resined (optionally);
- Wide power supply input range: 8...26V AC | 10...40V DC;
- Mini-Fit® / AMP SuperSeal 1.5 connectors;
- Metal enclosure with fixing lugs;
- Possibility to use Metal hose clamps for fixing it without using lugs;
- Microprocessor for data control;
- Wide temperature range: -40°C / 105°C (-40°F / 221°F).

**CONFIGURATION:**

You need Compositor SW67414 software on your PC in order to perform the following:

- Define the parameter of CAN;
- Define the parameter of Modbus TCP;
- Define CAN frames with which is possible to read Modbus data;
- Define CAN frames with which is possible to write Modbus data.

**EXAMPLE OF CONNECTION:**



## CONNECTION SCHEME:

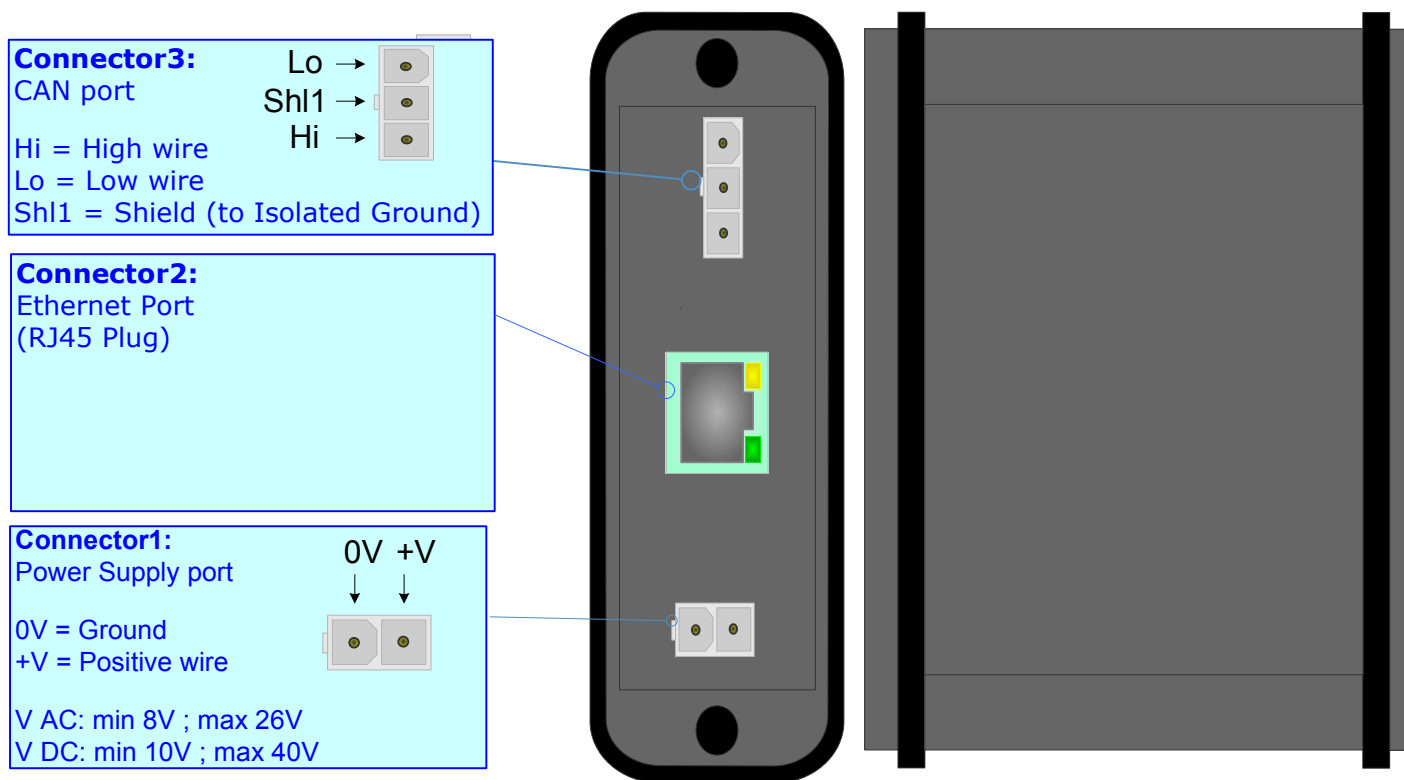


Figure 1: Connection scheme for HD67414-E4x-xx

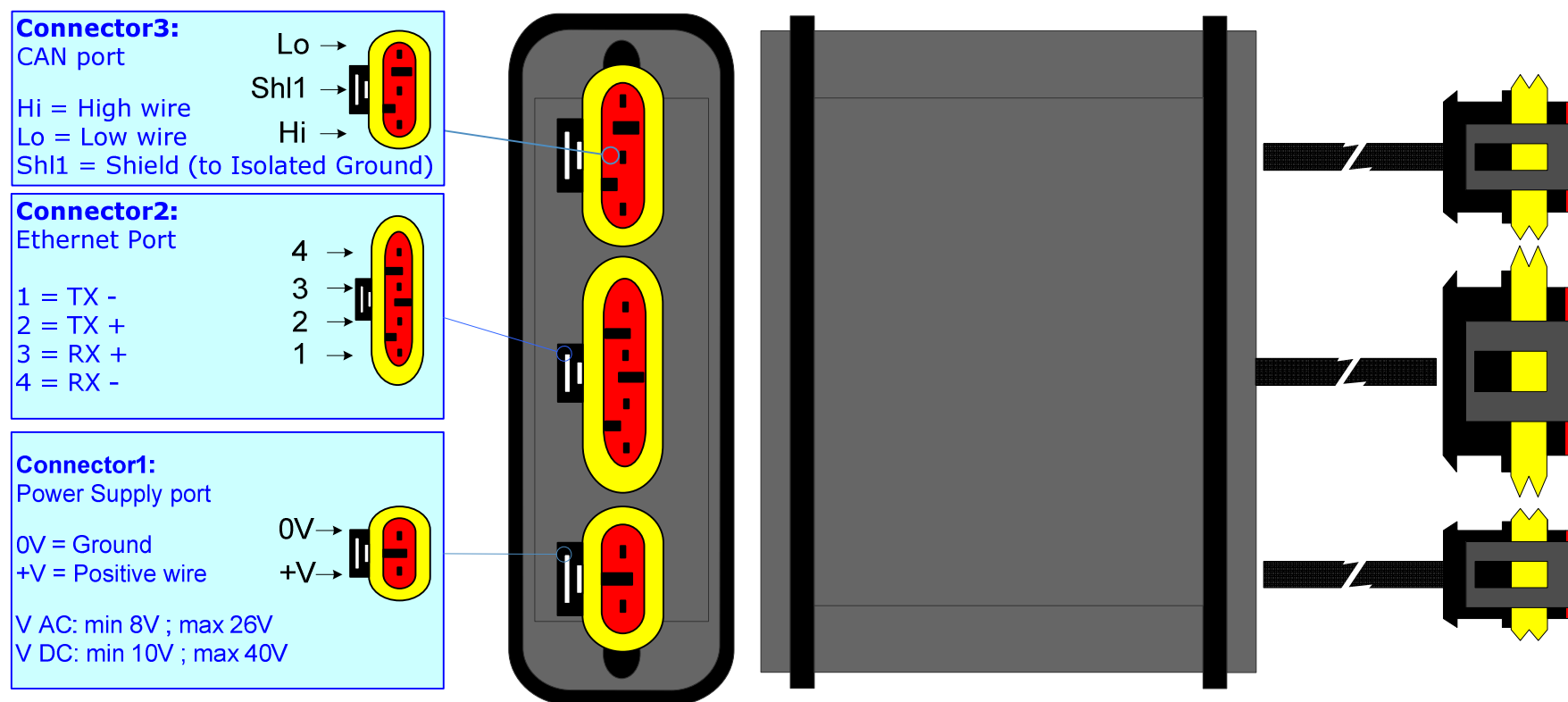




Figure 2: Connection scheme for HD67414-E7x-xx

## POWER SUPPLY:

The devices can be powered between a wide range of tensions. For more details see the two tables below.

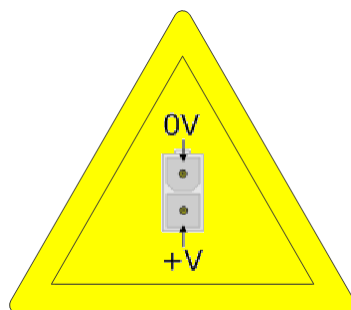
	VAC 		VDC 	
	Vmin	Vmax	Vmin	Vmax
HD67414-Exx-xx	8V	26V	10V	40V

Consumption at 24V DC:

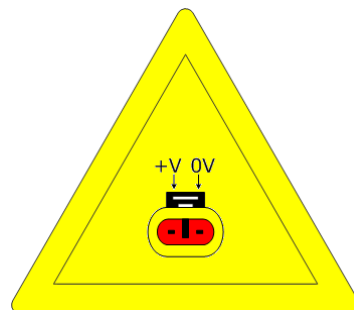
Device	W/VA
HD67414-Exx-xx	4



**Caution: Not reverse the polarity power**



HD67414-E4x-xx



HD67414-E7x-xx

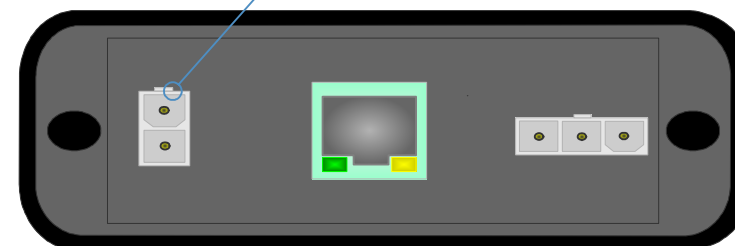
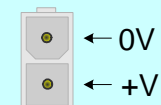


**Note:** It is possible to use also negative tensions. In this case the polarity must be inverted.

**Connector1:**  
Power Supply port

0V = Ground  
+V = Positive wire

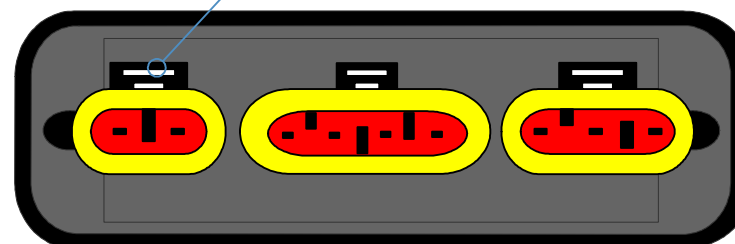
V AC: min 8V ; max 26V  
V DC: min 10V ; max 40V



**Connector1:**  
Power Supply port

0V = Ground  
+V = Positive wire

V AC: min 8V ; max 26V  
V DC: min 10V ; max 40V





## CAN:

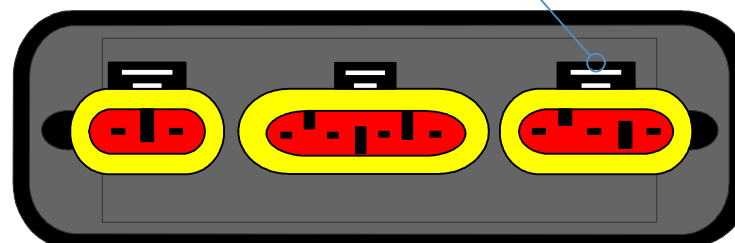
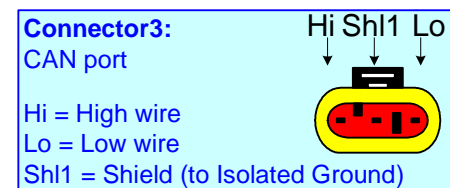
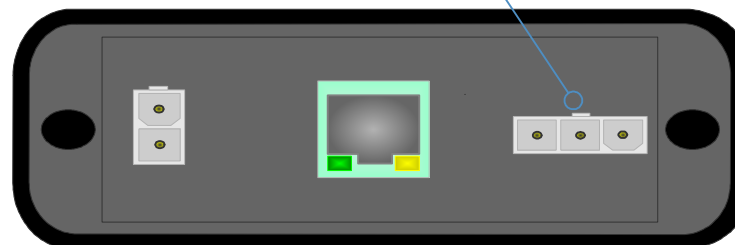
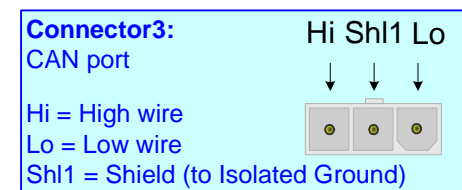
The connection of CAN in the HD67414-E4x-xx device must be made with a 3way MiniFit Female connector. The pinout of Male Mini-Fit connector of the board is at right side of the page.

The connection of CAN in the HD67414-E7x-xx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.

The termination of CAN line, with a 120Ω resistor, in the HD67414-Exx-xx is made internally of the device; when the order is performed. If the device have the CAN terminated the code is the follow: HD67414-Exx-Yx; otherwise is this other: HD67414-Exx-Nx.

Cable characteristics:

<b>DC parameter:</b>	Impedance	70 Ohm/m
<b>AC parameters:</b>	Impedance	120 Ohm/m
	Delay	5 ns/m
<b>Length</b>	<b>Baud Rate [bps]</b>	<b>Length MAX [m]</b>
	10 K	5000
	20 K	2500
	50 K	1000
	100 K	650
	125 K	500
	250 K	250
	500 K	100
	800 K	50
	1000 K	25

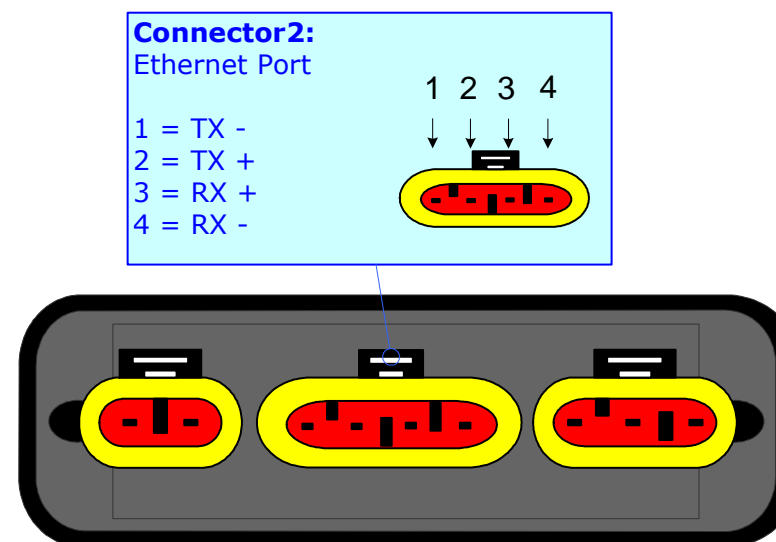


**ETHERNET:**

The connection of Ethernet in the HD67414 device must be made with at least a Category 5E cable. The maximum length of the cable should not exceed 100m. The cable has to conform to the T568 norms relative to connections in cat.5 up to 100 Mbps. To connect the device to an Hub/Switch is recommended the use of a straight cable, to connect the device to a PC/PLC/other is recommended the use of a cross cable.

The connection of Ethernet in the HD67414-E4x-xx device must be made with RJ45 connector.

The connection of the Ethernet in the HD67414-E7x-xx device must be made with a AMP SuperSeal 1.5 Male connector. The pinout of Female connector of the board is at right side of the page.



## USE OF COMPOSITOR SW67414:

To configure the "CAN / Modbus TCP Master - Converter", use the available software that runs with Windows, called SW67414. It is downloadable on the site [www.adfweb.com](http://www.adfweb.com) and its operation is described in this document. *(This manual is referenced to the last version of the software present on our web site)*. The software works with MSWindows (MS 2000, XP, Vista, Seven, 8; 32/64bit).

When launching the SW67414 the right window appears (Fig. 3).

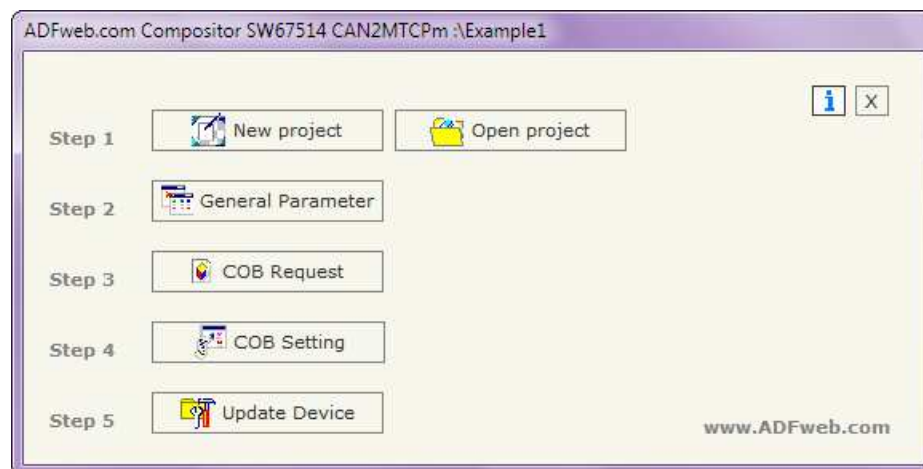


Figure 3: Main window for SW67414

## NEW PROJECT / OPEN PROJECT:

The "New Project" button creates the folder which contains the entire device configuration.



A device configuration can also be imported or exported:

- To clone the configurations of a Programmable "CAN / Modbus TCP Master - Converter" in order to configure another device in the same manner, it is necessary to maintain the folder and all its contents;
- To clone a project in order to obtain a different version of the project, it is sufficient to duplicate the project folder with another name and open the new folder with the button "Open Project".

**GENERAL PARAMETER:**

This section defines the fundamental communication parameters of two Buses, CAN bus and Modbus.

By pressing the "**General Parameter**" button from the main window for SW67414 (Fig. 2) the window "General Parameter" appears (Fig. 3):

- In the field "**Baud Rate**" the velocity of the CAN bus is defined;
- Select the type of CAN (**CAN 2.0A 11bit** or **CAN 2.0B 29bit**);
- In the fields "**IP**" insert the IP address that you want to give to master Modbus;
- In the fields "**SubNet Mask**" insert the SubNet Mask;
- In the fields "**Default Gateway**" insert the default gateway that you want to use. This feature can be enabled or disabled pressing the Check Box field.
- In the field "**Port**" insert the number of port;
- "**Time Out**" is the maximum time that the device attends for the answer from the Slave interrogated;
- If the field "**Don't disconnect the socket**" is checked, the gateway don't disconnect the socket until a new device need to be connected.

General Parameter

CAN

Baud Rate: 500

☐ CAN2.0A 11bit ☒ CAN2.0B 29bit

Serial

IP: 192, 168, 2, 189

SubNet Mask: 255, 255, 255, 0

☐ Default Gateway: 192, 168, 0, 1

Port: 502

Time Out [mS]: 1000

☐ Don't disconnect the socket

OK Cancel

Figure 4: "Set communication" window

**PING DEVICE:**

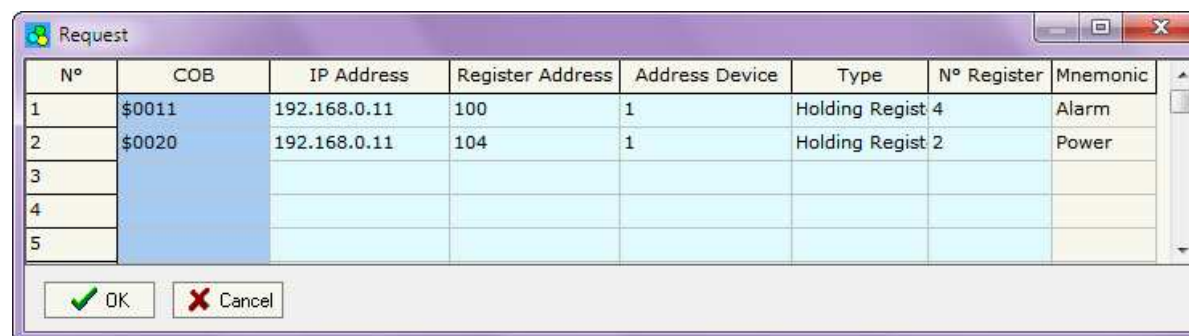
If it is necessary to do a Ping on the net, before pressing the "**Ping Device**" button insert a value in the field on the right and then press the button. In order to do this, the gateway must be in RUN mode.

## COB REQUEST:

By pressing the "**COB Request**" button from the main window for SW67414 (Fig. 2) the window "Request" appears (Fig. 4).

The COB inserted in this table is the data read from the Modbus:

- In the field "**COB**" insert the COB of the CAN bus frame;
- In the field "**IP Address**" insert the IP address of Modbus device that contains the Modbus data;
- In the field "**Register Address**" insert the register that contains the Modbus data;
- In the field "**Address Device**" insert the address of Modbus device that contains the Modbus data;
- In the field "**Type**" insert the type of Modbus register that you would like to read:
  - Coil Status;
  - Input Status;
  - Holding Register;
  - Input register.
- In the field "**N° Register**" insert the number of consecutive registers you configured;
- In the field "**Mnemonic**" you can insert a brief description.



N°	COB	IP Address	Register Address	Address Device	Type	N° Register	Mnemonic
1	\$0011	192.168.0.11	100	1	Holding Register	4	Alarm
2	\$0020	192.168.0.11	104	1	Holding Register	2	Power
3							
4							
5							

Figure 4: "Request" window

For example:

If we want to read the 4 Holding Register at address 100 (Fig. 4) we must send a CANbus frame with COB ID= \$0011 and no data (Fig. 5-1).

As answer we would have a CANbus frame with COB ID=\$0011 and 8 bytes of data which are the value of the Modbus registers (Fig. 5-2).

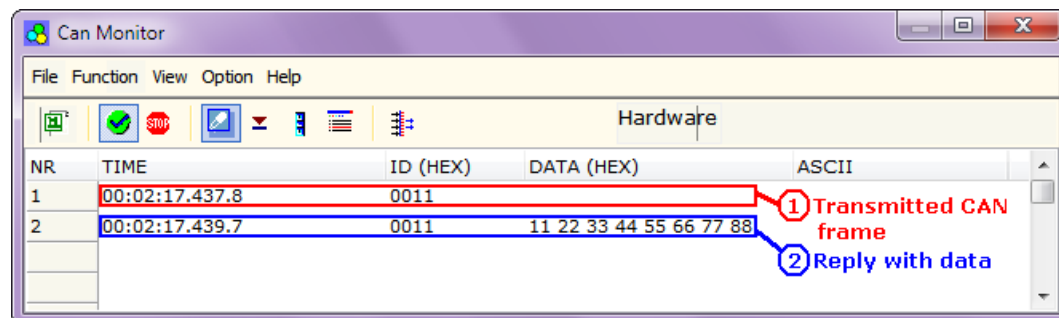


Figure 5: "Can Monitor" window for visualize the CAN frame for read request 1

If you are using a CAN Analyzer, you can see the windows on the right.

(For example you can see our CAN Analyzer at the following address: [www.adfweb.com/home/products/CAN\\_BUS\\_analyzers.asp](http://www.adfweb.com/home/products/CAN_BUS_analyzers.asp) )

In the second case of the table:

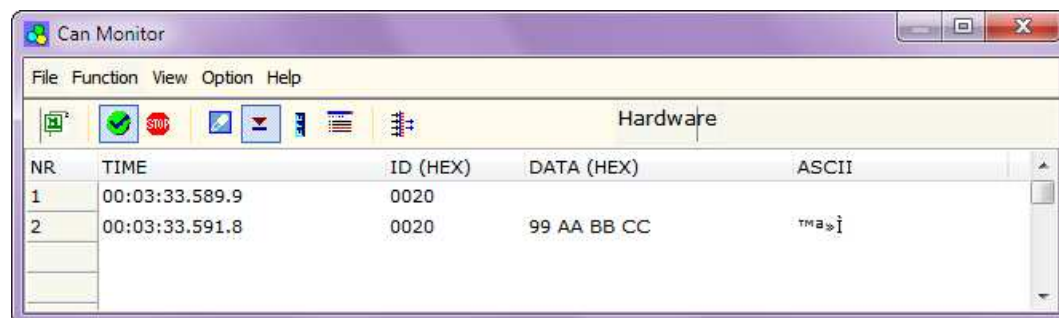


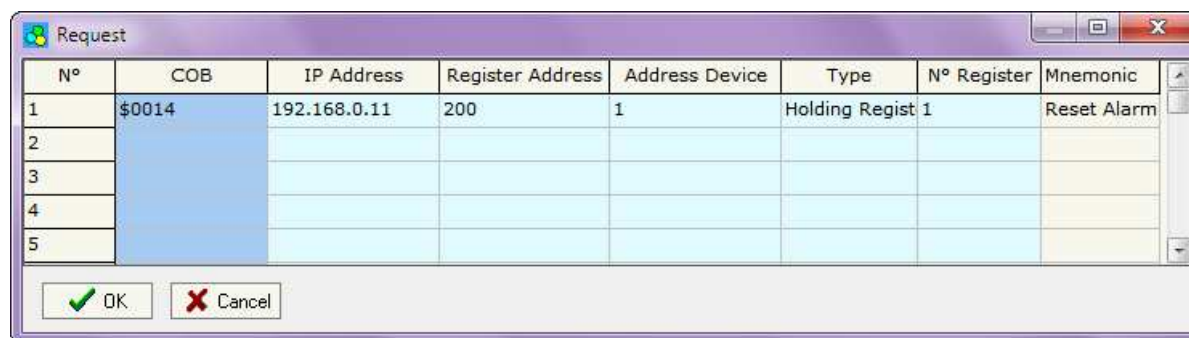
Figure 6: "Can Monitor" window for visualize the CAN frame for read request 2

## COB SETTING:

By pressing the "**COB Setting**" button from the main window for SW67414 (Fig. 2) the window "Request" appears (Fig. 7).

The COB inserted in this table is the data written from the Modbus:

- ✚ In the field "**COB**" insert the COB of the CAN bus frame;
- ✚ In the field "**IP Address**" insert the IP address of Modbus device that contains the Modbus data;
- ✚ In the field "**Register Address**" insert the register that contains the Modbus data;
- ✚ In the field "**Address Device**" insert the address of Modbus device that contains the Modbus data;
- ✚ In the field "**Type**" insert the type of Modbus register that you would like to read:
  - Coil status;
  - Input status;
  - Holding register;
  - Input register.
- ✚ In the field "**N° Register**" insert the number of consecutive registers you configured;
- ✚ In the field "**Mnemonic**" you can insert a brief description.



N°	COB	IP Address	Register Address	Address Device	Type	N° Register	Mnemonic
1	\$0014	192.168.0.11	200	1	Holding Regist	1	Reset Alarm
2							
3							
4							
5							

Figure 7: "Request" window

For example:

If we want to write the 4 Holding Register at address 200 (Fig. 7) we must send a CANbus frame with COB ID=0014 and 8 bytes of data (Fig. 8-1); they are the value of the registers Modbus that they want to set.

If the Modbus write command is correctly received, into CANbus you found the echo of the frame transmitted (Fig. 8-2).

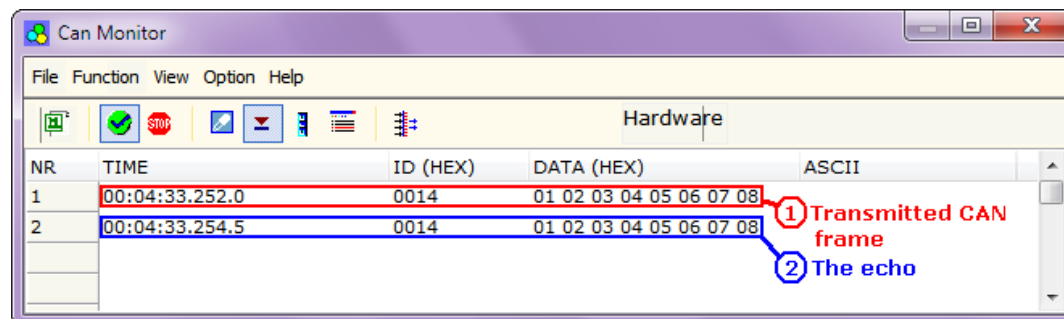


Figure 8: "Can Monitor" window for visualize the CAN frame for write request

If you are using a CAN Analyzer, you can see the window on the right. (For example you can see our CAN Analyzer at the following address: [http://www.adfweb.com/home/products/CAN\\_BUS\\_analyzers.asp](http://www.adfweb.com/home/products/CAN_BUS_analyzers.asp) )

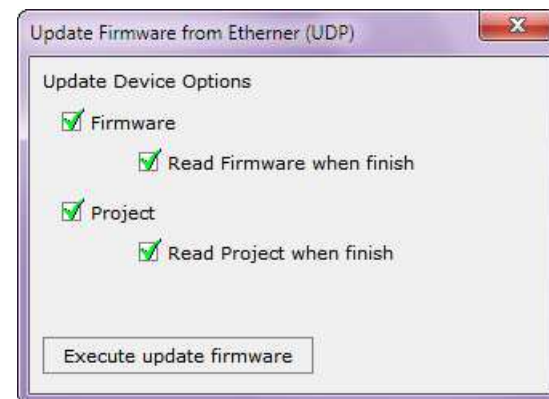
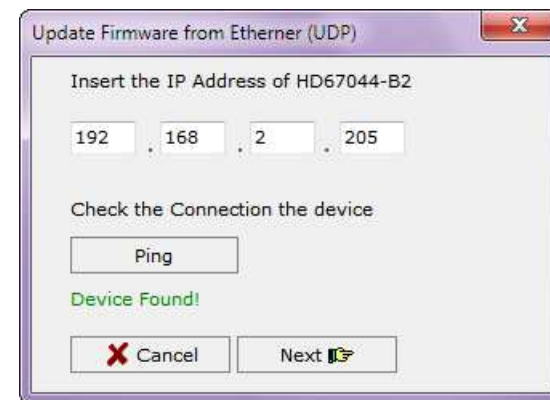


**UPDATE DEVICE:**

By pressing the "**Update Device**" button it is possible to load the created Configuration into the device; and also the Firmware, if is necessary.

If you don't know the actual IP address of the device you have to use this procedure:

- Connect the Ethernet cable;
- Insert the IP "**192.168.2.205**";
- Turn on the device;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload.
- When all the operations are "OK" configuration/firmware on the device is correctly updated.



If you know the actual IP address of the device you have to use this procedure:

- Turn on the Device with the Ethernet cable inserted;
- Insert the actual IP of the Converter;
- Press the "**Ping**" button, must appear "Device Found!";
- Press the "**Next**" button;
- Select which operations you want to do;
- Press the "**Execute update firmware**" button to start the upload;
- When all the operations are "OK" configuration/firmware on the device is correctly updated.



**Note:**

When you install a new version of the software it is better if the first time you do the update of the Firmware in the HD67414.



**Note:**

When you receive the device, for the first time, you have to update also the Firmware in the HD67414 device.



**Warning:**

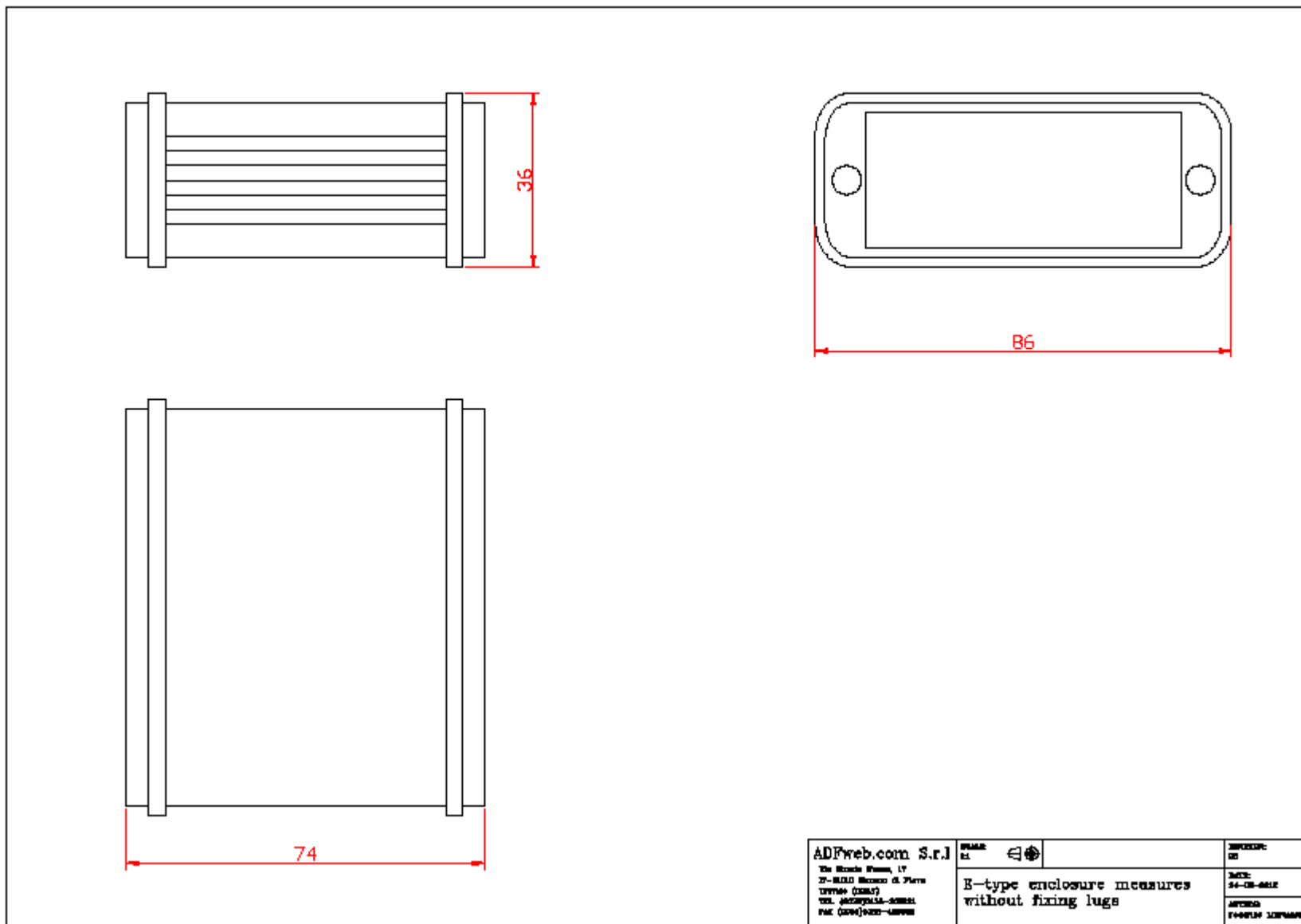
If the Fig. 10 appears when you try to do the Update before require assistance try these points:

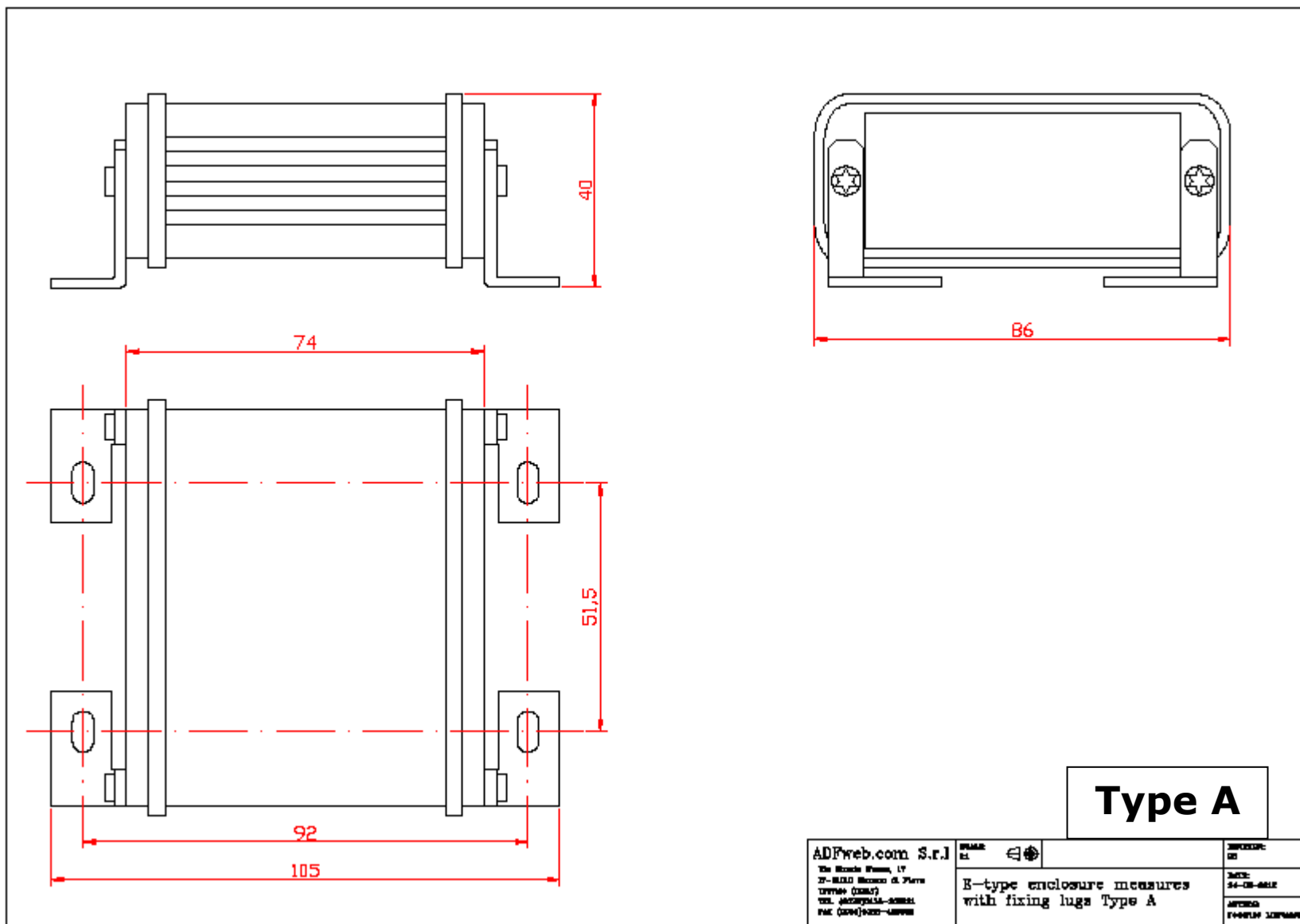
- Try to repeat the operations for the updating;
- Try with another PC;
- Try to restart the PC;
- If you are using the program inside a Virtual Machine, try to use in the main Operating System;
- If you are using Windows Seven or Vista, make sure that you have the administrator privileges;
- Take attention at Firewall lock.

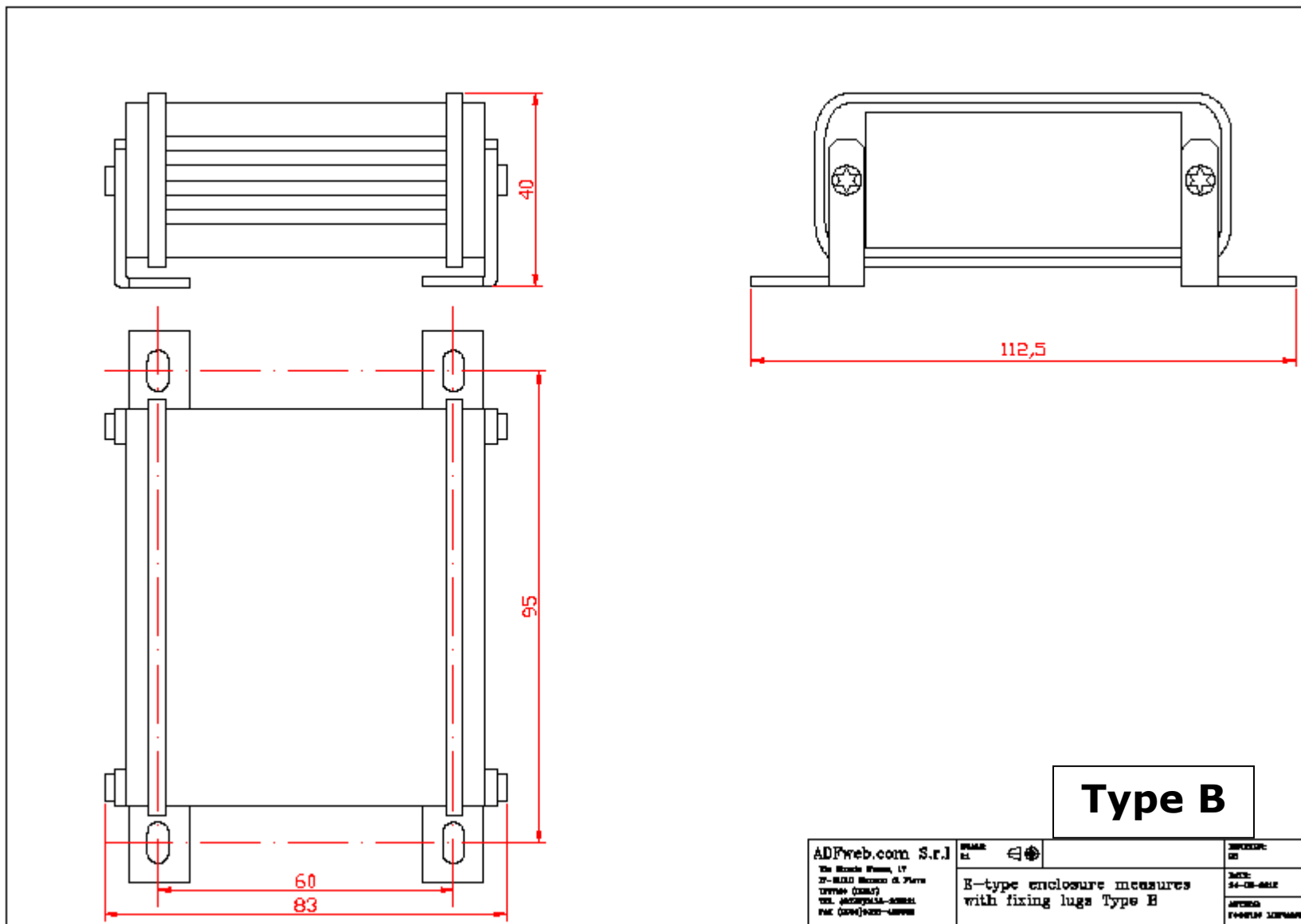


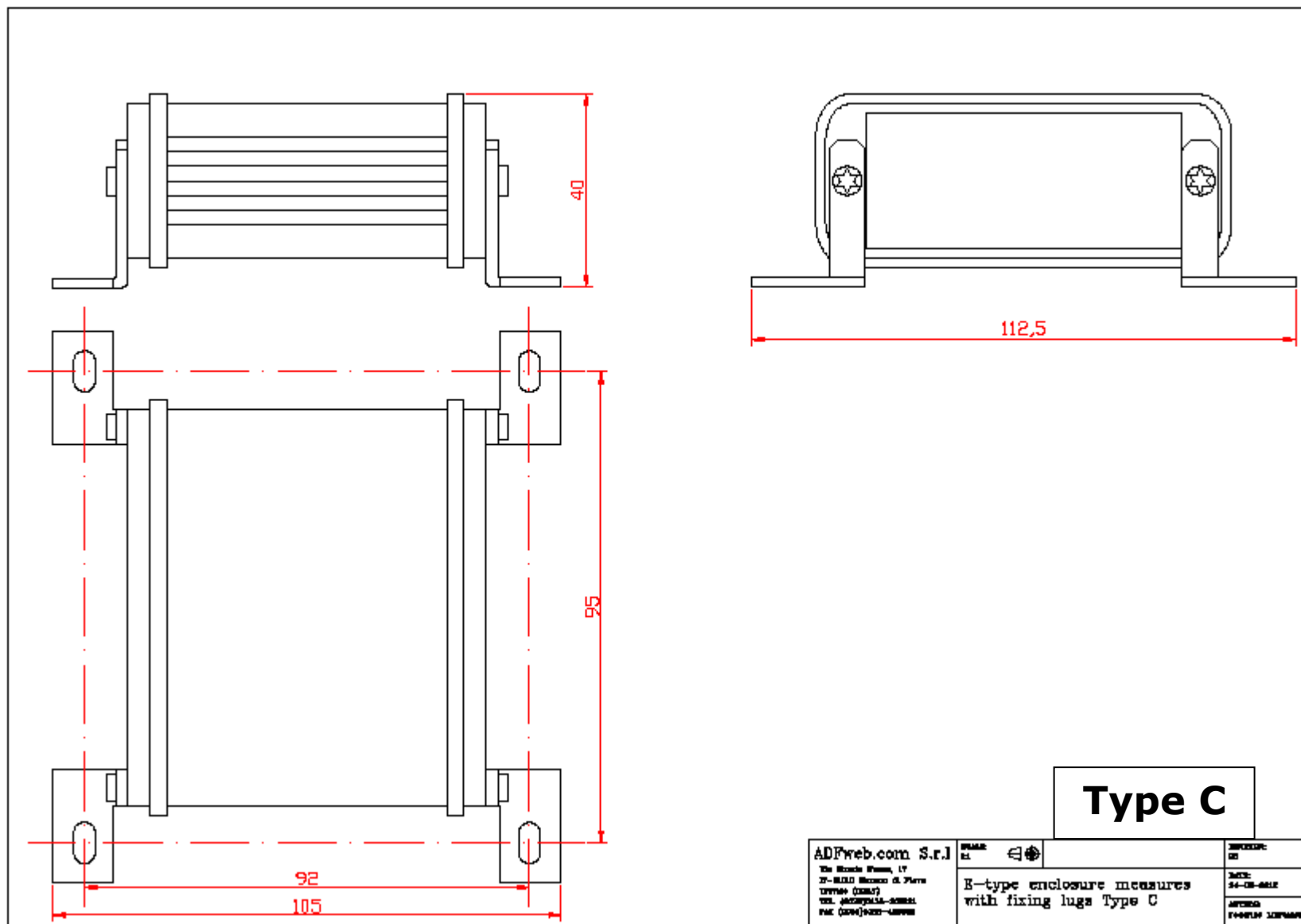
In the case of HD67414 you have to use the software "SW67414": [www.adfweb.com/download/filefold/SW67414.zip](http://www.adfweb.com/download/filefold/SW67414.zip).

## MECHANICAL DIMENSIONS:





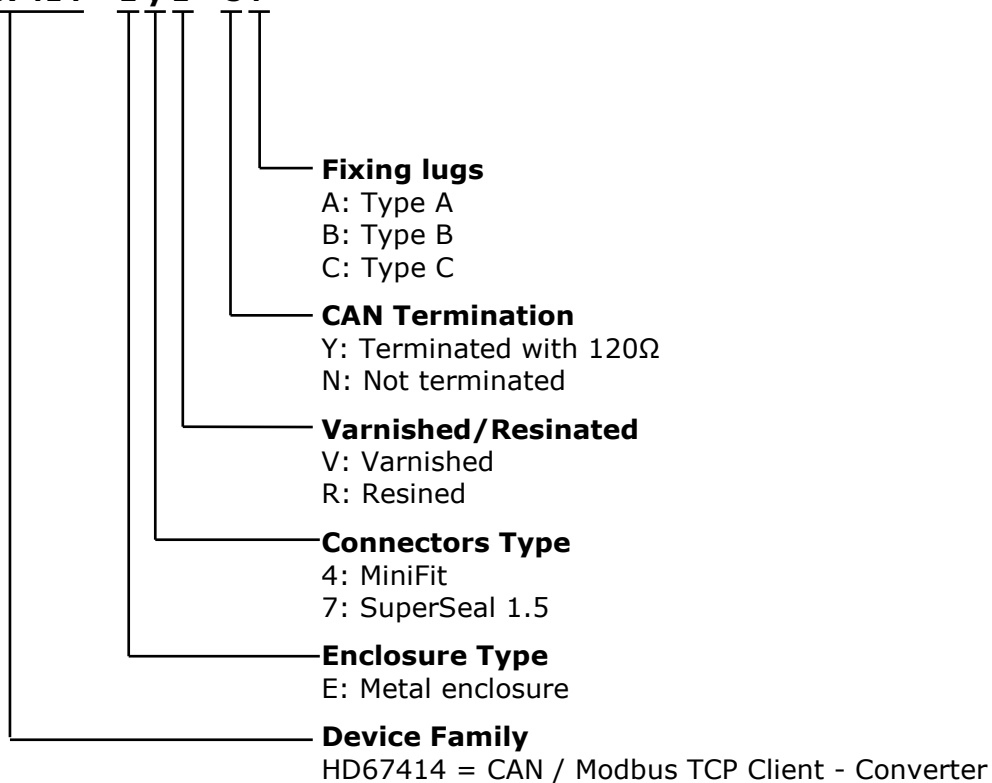




## ORDERING INFORMATION:

The ordering part number is formed by a valid combination of the following:

**HD67414 - E y z - s f**



## ACCESSORIES:

- Order Code: **AC34001** - Rail DIN - Power Supply 220/240V AC 50/60Hz – 12 V AC
- Order Code: **AC34002** - Rail DIN - Power Supply 110V AC 50/60Hz – 12 V AC

## DISCLAIMER

All technical content within this document can be modified without notice. The content of the document content is a recurring audit. For losses due to fire, earthquake, third party access or other accidents, or intentional or accidental abuse, misuse, or use under abnormal conditions repairs are charged to the user. ADFweb.com S.r.l. will not be liable for accidental loss of use or inability to use this product, such as loss of business income. ADFweb.com S.r.l. shall not be liable for consequences of improper use.

## OTHER REGULATIONS AND STANDARDS

### WEEE INFORMATION



Disposal of old electrical and electronic equipment (as in the European Union and other European countries with separate collection systems).

■ This symbol on the product or on its packaging indicates that this product may not be treated as household rubbish. Instead, it should be taken to an applicable collection point for the recycling of electrical and electronic equipment. If the product is disposed correctly, you will help prevent potential negative environmental factors and human health, which could otherwise be caused by inappropriate disposal. The recycling of materials will help to conserve natural resources. For more information about recycling this product, please contact your local city office, your household waste disposal service or the shop where you purchased the product.

### RESTRICTION OF HAZARDOUS SUBSTANCES DIRECTIVE



The device respects the 2002/95/EC Directive on the restriction of the use of certain hazardous substances in electrical and electronic equipment (commonly referred to as Restriction of Hazardous Substances Directive or RoHS).

### CE MARKING



The product conforms with the essential requirements of the applicable EC directives.



**WARRANTIES AND TECHNICAL SUPPORT:**

For fast and easy technical support for your ADFweb.com SRL products, consult our internet support at [www.adfweb.com](http://www.adfweb.com). Otherwise contact us at the address [support@adfweb.com](mailto:support@adfweb.com)

**RETURN POLICY:**

If while using your product you have any problem and you wish to exchange or repair it, please do the following:

- 1) Obtain a Product Return Number (PRN) from our internet support at [www.adfweb.com](http://www.adfweb.com). Together with the request, you need to provide detailed information about the problem.
- 2) Send the product to the address provided with the PRN, having prepaid the shipping costs (shipment costs billed to us will not be accepted).

If the product is within the warranty of twelve months, it will be repaired or exchanged and returned within three weeks. If the product is no longer under warranty, you will receive a repair estimate.

**PRODUCTS AND RELATED DOCUMENTS:**

Part	Description	URL
HD67117	CAN bus Repeater	<a href="http://www.adfweb.com?Product=HD67117">www.adfweb.com?Product=HD67117</a>
HD67316	CAN bus Analyzer	<a href="http://www.adfweb.com?Product=HD67316">www.adfweb.com?Product=HD67316</a>